

LINGUISTIC COMPARISON
IN SOUTH EAST ASIA AND THE
PACIFIC

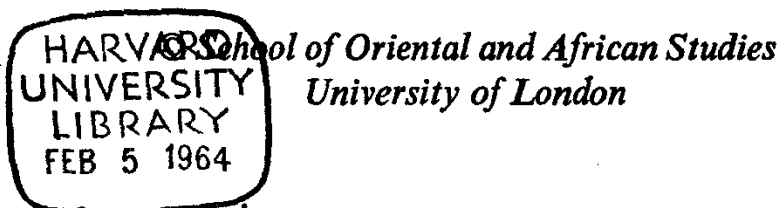
School of Oriental and African Studies
University of London

[Sole Agents: Luzac & Company, Ltd., 46 Gt. Russell St., London, W.C. 1]

1963

Price 42s. net

2234.33, 35
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PROSODIC ANALYSIS, AND PHONOLOGICAL FORMULAE, IN TIBETO-BURMAN LINGUISTIC COMPARISON

By R. K. SPRIGG

GENERAL

In his article 'Relationship in Comparative Linguistics' W. S. Allen draws attention to 'a current and growing tendency to move away from the traditionally phonemic type of analysis in the direction of analyses having two outstanding characteristics: (1) They are "prosodic", in the sense that they are orientated with a view to syntagmatic implications rather than segmental oppositions . . . ; (2) They are "phonological", in the sense that their systems are relevant to the structural positions for which they are established, and are congruent with other levels of analysis, notably the grammatical. . . . This does not raise any special new difficulties for comparison—more likely the reverse; for the categories established by these techniques often show a wider range of application than the traditional phonemic classes'.¹ That Allen has not exaggerated the advantages to be gained from prosodic analysis, the non-phonemic analysis, promulgated by J. R. Firth, to which he refers, I hope to demonstrate in this paper by applying it to phonic data from a selection of Tibeto-Burman languages, each of which presents rather different problems to the comparatist, Burmese and two dialects of Tibetan, the Lhasa and the Sherpa (pp. 99–108).²

In particular the purpose of this paper is to propose as the most suitable forms for linguistic comparison in Tibeto-Burman languages, and possibly in other languages of South East Asia as well, a phonological formula for each lexical item such that it shall summarize all recorded variant phonetic forms of that lexical item.³ Such a phonological formula is not to be identified with any particular one of the variant phonetic forms considered as a norm from which the remaining forms deviate (the citation form, or form used in speaking the item as a one-word sentence, or the form used in absolute position, is commonly given priority over other forms),⁴ but is equally representative of, and equally remote from, every one of the variant phonetic forms. Each phonological formula is, then, invariable, and exemplified in utterances only through one or other of its associated phonetic forms; and the test of adequacy of each is what J. R. Firth

¹ *TPS*, 1953, pp. 84–5.

² J. R. Firth, 'Sounds and Prosodies', *TPS*, 1948, pp. 127–52; cf. also R. H. Robins, 'Aspects of Prosodic Analysis', *Proceedings of the University of Durham Philosophical Society*, I, B (Arts), 1, 1957, pp. 1–12, but especially pp. 3–4.

³ cf. also R. K. Sprigg, 'Junction in Spoken Burmese', *Studies in Linguistic Analysis*, Oxford, 1957, pp. 105–6.

⁴ As, for example, by William Cornyn, in his 'Outline of Burmese Grammar', *Language*, 20, 4, 1944, Suppl., p. 9 (25, 28–9), and by Raven I. McDavid, Jr., in his 'Burmese Phonemics', *Studies in Linguistics*, 3, 1, 1945, pp. 6 (1), 11 (8.1), 15 (9.2).

has called *renewal of connection*, via an exhaustive statement of phonetic exponents; indeed, each such phonological formula serves as an index of the total exponents of each of its components, whether prosodic or phonematic.¹

The terms prosodic and phonematic refer to the two major phonological categories distinguished by Firth in prosodic analysis. The prosodic category is primarily concerned with the analysis of the phonic data into sequences of syntagmatically associated features extending over two or more segments; these sequences of related features are stated as exponents of terms in prosodic systems applicable to (prosodic) units, or Pieces.² In extent prosodic Pieces range from the monosyllabic Piece (or Syllable Piece) at one extreme to the polysyllabic Sentence Piece, for which intonation systems are statable, at the other; between these two extremes such prosodic units as disyllabic Piece, Word Piece, Clause Piece can be distinguished.

Although the primary concern of the prosodic category is with sequences of features extending over two or more segments, this category can also be applied to features characterizing single segments, provided that there are good grammatical grounds for associating the forms characterized by these single-segment features. Examples of this use of prosodic statement to group together at the phonological level two different grammatical forms of one Verb, each of which forms is distinguished from the other by phonetic features limited to a single segment, appear in the Tibetan section (pp. 102, 105-7), e.g. short vowel duration and backness (ɔ, ɔ/ə, ʌ/a) and long vowel duration and frontness (y:, ø:, ε:) are stated prosodically, through the Quantity system, rather than phonematically, in order to emphasize the identity in grammatical function of the phonetic distinctions obtaining between the two forms of each Verb regardless of vocalic differences, e.g. so and sy:, srub and srubs, churn, so/so and sø:, bzo and bzos, make, ta/ta and tɛ:, blta and bltas, look at.

As a matter of procedure prosodic analysis gives priority to the prosodic category: phonematic analysis is not undertaken until analysis of the phonic data in terms of prosodic systems has been completed. At this stage, when no further syntagmatic associations of features are observable, and there are no grammatical grounds for further prosodic statement, any phonetic differentiation that remains unaccounted for is subjected to analysis into phonematic units, on the basis of lexically significant minimal phonetic distinctions within prosodically comparable Syllables. The phonematic aspect of prosodic analysis

¹ cf. also A. E. Sharp: 'The word as such has no audible features: it exhibits, for instance, no attributes of stress of a kind that may be "lost" or "modified" in sentences. Rather it may be given what I call a "conphonational formula" ... to summarize the totality of its exemplification in utterance' ('Stress and Juncture in English', *TPS*, 1960, p. 108).

For *renewal of connection* see F. R. Palmer, '"Openness" in Tigre', *BSOAS*, 18, 3, 1956, p. 577.

² When used technically, as formally established phonological and grammatical terms, Piece, Syllable, Sentence, etc., are distinguished by capital letters.

is thus paradigmatic, as opposed to syntagmatic, and in this respect resembles phonemic analysis. The components of phonological formulae reflect this phonological distinction: prosodic components refer to terms of prosodic systems, and phonematic components to terms of phonematic systems; and the two types of component are differently symbolized below.

A phonological formula such that it summarized all phonetic variant forms of a given lexical item, a lexical-item phonological formula (p. 79), is not the only possible type of phonological formula: the degree of generality of phonological formulae varies with the purpose that they are intended to serve. A formula such as Burmese Vz, for example, is generalized to a high degree, at which it applies not to an individual lexical item but to all monosyllabic lexical items that are prosodically classifiable as z (p. 89) provided that they are also of the type for which V systems can be stated (p. 98), e.g. *pə pɛː* give, *wɛ way* buy, *θwa swāː* go; *pju(dɛ) phrū(sañ)* white, *pó pui* send, *səzə coco* early.¹ At the other extreme there is the phonological formula specific enough to indicate a particular variant phonetic form from among several variant phonetic forms of a given lexical item. The variant phonetic forms of the Burmese Verb *sok*, drink, for example, are numerous (p. 90), and include *θao' sok* drink it, *(lu)θao(jə) lūsokre* drinking-water, and *(mə)θao(phu) masokbhūː* does not drink; the variant phonetic form in *məθaophu*, for example, would be formulated as *lb̄p̄ysOkphf*, in which lower-case letters refer to terms of prosodic systems, and capitals (only O here) to terms of phonematic systems; and components that are concerned with Syllable-final features of the lexical item are placed last, after the phonematic component, if any.²

¹ The phonetic transcription, in the International Phonetic Alphabet but with the addition of three symbols, is not more detailed than is necessary for the immediate purpose. Pitch features have, therefore, been generally left unsymbolized; duration features are symbolized only on pp. 87-8, 99-107; and θ and ð have been used to symbolize dentality accompanied not only by friction but also by the Word-initial occlusion that has been observed to alternate with friction for one and the same Burmese lexical item. n symbolizes dentality when followed by ð, but otherwise alveolarity; t and d symbolize alveolarity, together with dorsality when followed respectively by ɛ or ɜ, but otherwise apicality. The three additional symbols are: ', e.g. é, which symbolizes glottal-trill (or 'creaky') voice quality, and V and C, which have been used to symbolize vowel and consonant respectively in preference to the symbols suggested on p. 19 of *The Principles of the International Phonetic Association* (London, 1949).

² The present statement, of phonological formulae in which phonematic components V are recognized for some Syllables, including *sok*, while others have no phonematic components, and are wholly prosodic, supersedes my statement in 'Junction in Spoken Burmese' (pp. 109 ff.), in which structures CV and CVC are recognized. This latter statement is defective in that it does not fully take into account the syntagmatic implications of certain sequences of inter-related phonetic features (those dealt with through the Quality, Juncture, Aspiration, and Labialization systems; pp. 85-90, 91-5).

It is unfortunate that the resources of the roman alphabet are so limited as to make it necessary to use the same letter for more than one term, e.g. f (from fronting) as a term of the Labialization system, and f (from fast) as a term of the Tempo system; but there is in practice little chance of confusion: some of the terms, e.g. f, of the Tempo system, are not needed in the

While all phonematic components of phonological formulae, together with those prosodic components which refer to prosodic systems that are stated for a monosyllabic Piece (or Syllable), could be regarded as elements of Syllable structure, the remaining components, all those which refer to prosodic systems statable only for polysyllabic Pieces (in Burmese, Tone, Juncture, Quality, etc., pp. 85-96) are not elements of Syllable structure but classifications of the lexical item in question in accordance with its power of inclusion in the relevant types of polysyllabic Piece. Thus, the component '1' does not mean that the lexical item in whose phonological formula it occurs is a Tone-1-Syllable lexical item but that that lexical item is exemplified exclusively in Tone-1 Words (of from one to six Syllables, in the case of Words in which monosyllabic Verbs are exemplified), e.g. the Tone-1 monosyllabic-Verb lexical item *swā:* can be exemplified in the hexasyllabic Tone-1 Verb-and-Particle Word (*məθwa(bəjānā) maswā:paracenhan'* do not let's go, equally with the monosyllabic Tone-1 Verb Word *θwa swā:* go away.¹

The phonetic-variant phonological formula given above (p. 81), and many other phonological formulae of whatever degree of generality, can be simplified; for certain components are implied by other more specific components, with the result that the more general components can be omitted from the formulae. In the phonetic-variant formula *1bṗysOkphf*, for example, (i), the component 1 (Tone 1) is implied by *k*; for *k* Verb Syllables are restricted to Tone-1 Verb-and-Particle, and Verb, Words (p. 89); (ii), *b* (from back, of a five-term Labialization system, *b, s, ə, c, f*; p. 96) is implied by the phonematic unit *O*; for *O* is one of the two terms (*O, U*) of the *V* system statable for *kb* Verbs (p. 98); (iii), *ṗ* (non-*p*, of a two-term Palatalization system, *p, ṗ*; p. 97) is implied by the component *s* (of the thirteen-term Juncture system; pp. 91-6); and so also is *ȳ* (non-*y*) of the two-term Yodization system (p. 97). This formula could therefore be abbreviated to *sOkphf*, which would be sufficient for *renewal of connection* with the particular phonetic-variant form of *sok* that occurs in *məθaophu masokbhū:* does not drink, via a complete statement of the exponents of each term referred to in the formula, implied or explicit.

For linguistic comparison, though, a formula so detailed as to indicate a particular variant phonetic form would be too specific, while a formula as generalized as *Vz* (p. 81) might well not be specific enough. Formulae as generalized as this last are appropriate to broad comparisons, of Tone systems and other prosodic systems; but what is required for comparing particular lexical items is a formula sufficiently specific to distinguish the individual lexical

formulae devised for the unambiguous symbolization of lexical items (as opposed to phonetic-variant forms; p. 81); and it is as a last resort always possible to specify the system to which a particular term belongs.

¹ For the phonetic criteria of Word division in spoken Burmese see Sprigg, 'Junction', pp. 108-24.

items from all but homophones belonging to the same grammatical category, but not so particularized as to indicate one out of several variant phonetic forms of that lexical item. The following Burmese phonological formulae are at a suitable degree of abstraction for the comparison of individual lexical items (components rendered omissible by the implications of other more specific components are enclosed in brackets, and could be dispensed with provided that those implications have been adequately stated) :

(1b̄p̄)gph̄ȳOz p̄ó pui' send ; (1bp)mhyOk m̄jaot- mhrok(sañ) raises ;
 (b̄ḡp̄ȳ)2khUm k̄hoṁ khun jump ; (b̄ḡp̄)2phyUz p̄ju- phrū(sañ) is white ;
 (1b̄p̄ȳ)ḡch̄Ωz s̄zo coco early.

The prosodic and phonematic systems to which each of the components of these five lexical-item phonological formulae refers are described, and the exponents of at least one term of each system stated, in the Burmese section below (pp. 85-99).

The lexical-item phonological formulae established here for modern spoken Burmese do not supersede Old-Burmese or modern-Burmese orthographic forms in Tibeto-Burman linguistic comparison ; they have been devised for comparison with phonological formulae similarly arrived at for lexically comparable items in modern Tibeto-Burman spoken languages and dialects for the purpose of producing common, or comparative, formulae (asterisked forms) valid, in the first instance, for all the dialects and languages of the Southern Unit of the Burma Branch of the Burmish Section of the Burmic Division, e.g. Burmese, Arakanese, Tavoyan, resting on the prosodic analysis of each member language.¹

For this first step, the constructing of asterisked forms for the Southern Unit, the lexical-item phonological formulae described here, each of which summarizes all observed variant phonetic forms of each lexical item, will, I believe, prove to be more suitable than, for example, the diversity of phonemic forms given for certain Burmese lexical items by Cornyn and by McDavid. The Verb *sok* (drink), for example, appears in at least five different phonemic forms (/θaup/, /θaum/, /θaut/, /θauθ/, /θauc/) in Cornyn's analysis, and the Verb *koñs* (good) in four (/kâun/, /gâun/, /kâun̄/, /kâum/), one of which would have to be arbitrarily chosen for this purpose.²

As compared with Cornyn's analysis McDavid's achieves a reduction in diversity of phonemic forms by phonemicizing syllable-final phonetic features for the most part independently of syllable-initial features, thereby giving his

¹ This classification is Shafer's ('Classification of the Sino-Tibetan Languages', *Word*, 11, 1955, p. 103).

² Cornyn, 'Outline', especially pp. 9-10. On the dominant role of the phoneme in linguistic comparison see Allen, 'Relationship', p. 60 : 'the formal correspondences are stated monosystemically in what are to all intents and purposes phonemic terms'. cf. also Henry M. Hoenigswald, *Language Change and Linguistic Reconstruction*, Chicago, 1960, in which the phoneme theory is assumed throughout.

phonemic analysis a prosodic flavour.¹ By this means McDavid gains the same advantage as my prosodic analysis, the summarizing of the diverse phonetic features of two types of syllable each in a single unit : (i), his tone phoneme /', my prosodic term *k* (pp. 85-90) ; (ii), his phoneme /n/, my prosodic term *m* (ibid.) ; but his analysis is less successful in dealing with syllable-initial features : like Cornyn he recognizes an alternation of syllable-initial voiced phonemes, through 'sandhi change' in 'close juncture', with the phonetically corresponding voiceless phonemes of 'open juncture', an alternation that will give him two phonemic forms, differing in their initial phoneme, for not a few lexical items, e.g. /hn/ and /n/, as in /hnêy/ or /nêy/, 'slow' ; /p/ and /b/ ; /ph/ and /b/ ; etc.² ; like Cornyn he recognizes a change of tone for certain lexical items, from a basic Tone I or II to Tone III³ ; like Cornyn he assumes a particular phonemic form, the form whose initial and final phonemes are those appropriate to 'open juncture', to be basic.

A further argument against phonemic analysis as a basis for linguistic comparison is that, through its preoccupation with grouping allophones into one phoneme in order to secure economies in number of units (and letters), it necessarily obscures the importance of environmental difference as a source of change. Hoenigswald emphasizes the point that 'the positional allophones grouped into one phoneme change in different ways, governed by the very similarities with neighbouring phones . . . which are likely to determine their phonetic differentiation in the first place. Conversely, if the historian finds that a phoneme has been split by conditioned change, he will conclude that allophonic variation has preceded it'⁴ ; but prosodic analysis, which gives maximum prominence to environmental difference by treating spans of syntagmatically associated features each as an aspect (exponent) of a unit, or Piece, would seem to provide a better basis for comparison than a theory that suppresses environmental difference in the interests of phoneme unity.

LEXICAL-ITEM PHONOLOGICAL FORMULAE IN BURMESE AND TIBETAN

The examples of phonological formulae at a suitable degree of generalization for linguistic comparison are given in the order Burmese (pp. 85-99), Tibetan (pp. 99-108). They are drawn mainly from lexical items that can be classified grammatically as Verbs, with a further restriction to monosyllabic Verbs in order to avoid having to deal with those Burmese Verbs which are disyllabic (*cañ:cā*: consider, *ruise* respect, *kacā*: play, etc.).⁵

¹ 'Burmese Phonemics', pp. 7-8, 12 ; the phonemic overlapping that arises from his partially independent phonemicization of initial and final sounds is condemned by Bloch in 'Phonemic Overlapping', *American Speech*, 16, pp. 278-84, reprinted in *Readings in Linguistics*, Baltimore, 1957, pp. 93-7.

² 'Burmese Phonemics', pp. 14-15.

³ *ibid.*, p. 17, n. 4.

⁴ Hoenigswald, *Language Change*, p. 73.

⁵ The term Verb of course differs in signification from one language to another in accordance

Burmese

I. General

Burmese has been chosen as the source of the first examples of lexical-item phonological formulae because it is a language in which there are no differences in Verb root (in this respect it differs from Tibetan ; p. 99) and also because it is possible to contrast the Burmese phonological formulae directly with phonemic forms, those of Cornyn and of McDavid.¹

II. Quality System

In the passage quoted on p. 79 Allen refers to the characteristics of prosodic analysis as being ‘ “ prosodic ” in the sense that they are orientated with a view to syntagmatic implications rather than segmental oppositions ’ ; this characteristic is illustrated by the following prosodic treatment of certain syntagmatic associations of features within Verb Syllables together with junction features that serve to unite the Verb Syllable with the following (Particle) Syllable. Since it has to do with inter-related vowel qualities and consonant qualities, this disyllabic Verb-and-Particle unit, or Piece (p. 80), is termed the Quality Piece.² The focus of interest in the following examples of the Quality Piece is differences in the phonetic form of the final part of the Verb Syllable considered in conjunction with matching features in the following Syllable (these features are enclosed in round brackets) :

- | | | | | | | | | |
|-------|---|----------------------|-----------------------|--|----------|----------------------|-------|---------|
| (i) | { | məðwabu ³ | (-ab-) | | məðwané | (-an-) | ðwajĩ | (-aj-) |
| | { | məðwaβu | (-aβ-) ⁴ | | | | | |
| (ii) | { | mɪjaombu | (-aomb-) | | mɪjaonné | (-aonn-) | jaǝjĩ | (-aǝj-) |
| | { | mɪjaommu | (-aomm-) ⁴ | | | | | |
| (iii) | { | məθaop'phu | (-aop'ph-) | | məθaonné | (-aonn-) | θaǝjĩ | (-aǝj-) |
| | { | məθaophu | (-aoph-) ⁴ | | məθaoné | (-aon-) ⁴ | | |

with the number of major grammatical categories distinguished for each ; and the Verb category in Burmese, which is non-Noun and non-Particle, cannot be identified with the Verb in Tibetan, which is non-Noun, non-Adjective, non-Postposition, and non-Particle ; but the impossibility of equating grammatical categories is no bar to comparing components of the phonological formulae of their members.

At the suggestion of Dr. Hla Pe, Reader in Burmese at the School of Oriental and African Studies, ḡ has been transliterated as ñ.

¹ Cornyn, ‘ Outline ’ ; McDavid, ‘ Phonemics ’.

² Some disyllabic Quality Pieces are co-terminous with a (disyllabic) Word, e.g. *swā:pā* please go (for the phonetic criteria used in delimiting Words see Sprigg, ‘ Junction ’, pp. 108–24) ; others are contained in a Word, of three or more Syllables, e.g. *swā:ū:(maññō)* I must go now, (*ma*)*swā:pa(racenhāñ')* let me not go.

³ For the Verb *swā:*, both voice (ð) and voicelessness (θ) have been observed as initial features for my informant, U Tin Maung, of Sagaing, the former being apparently more common, but for all other dental-initial monosyllabic Verbs voicelessness (θ) only.

⁴ Limited to Fast-Tempo utterances.

(i) *maswā:bhū:*, he does not go ; *maswā:nhan'*, do not go ; *swā:lhyani*, if you are going ; (ii) *maron:bhū:*, he does not sell ; *maron:nhan'*, do not sell ; *ron:lhyani*, if you sell ; (iii) *masokbhū:*, he does not drink ; *masoknhan'*, do not drink ; *soklhyani*, if you drink.

The Verb Syllable of the examples at (i) (*swā:*) is characterized by a different vowel quality (α) from those at (ii) and (iii), and by non-nasality, while the Particle Syllable *bhū:* is characterized throughout by voice, and initially by either plosion (b) or friction (β) ; the Verb Syllable at (ii) (*ron:*) is always characterized by nasality (m n ~) together with voice, while the Particle Syllable *bhū:* is again characterized by voice throughout, and initially, as a Fast-Tempo alternative to plosion (b), by nasality (m) (in which case nasality is a feature of both Syllables : mm), but not by friction (cf. (i)) ; the Verb Syllable (*sok*) at (iii) may or may not be characterized by oral occlusion ; if it is so characterized (p', n), the occlusion can be accompanied either by voice (n) or by voicelessness (p'), and either by nasality (n) or by non-nasality (p'), while the Particle Syllable *bhū:* is characterized, initially, not only by voicelessness of consonant (p) but also by partial voicelessness of vowel (h, i.e. p) ; in which case both Syllables may be characterized by voicelessness (p'ph).

The examples on p. 85 show sequences of interdependent phonetic features of three types (i), (ii), (iii) ; these figures could therefore be used each as an index corresponding to, and summarizing, a particular type of sequence, type (i), type (ii), and type (iii), or the disyllabic Piece characterized by each of these sequences, type-(i) Piece, type-(ii), or type-(iii). In other words a three-term prosodic system, named the Quality system, can be set up for disyllabic Pieces, the exponents of each of the terms of which are drawn not only from the Verb Syllable, the first of the two Syllables, but also from the remaining, or second, Syllable as well. The figures (i), (ii), and (iii) that were used above in classifying the examples by sequence of phonetic features could be retained each as a name of one of the terms of this three-term prosodic system ; but it seems preferable to replace them with names that shall have some mnemonic value. (i), (ii), and (iii) are therefore replaced by z, m, and k respectively, which serve as a reminder each of some prominent orthographic feature of the first (Verb) Syllable in each type of Piece : the first Syllable of a z Piece is generally represented by zero-consonant-final letter, e.g. *krī:*, big (and, less commonly, by -y, e.g. *way*, *buy*, and by -ñ, e.g. *krañ'*, look at), that of an m Piece by -m, e.g. *kram:*, rough (but also by -n, -m, -ñ, and -ñ, e.g. *pin*, thin ; *sum:*, use ; *mran*, see ; *cañ:*, mince), and that of a k Piece by -k, e.g. *sok*, drink (but also by -p, e.g. *ip*, sleep, -t, e.g. *sat*, kill, -c, e.g. *phrac*, become).

At this point it seems desirable to illustrate the terms *exponency* and *exponent* by a complete list of the phonetic exponents of z, m, and k.

*First Syllable (Verb)**Second Syllable (Particle)*

z

long duration + clear/glottal-trill (‘creaky’) voice quality + (i) close/half-close/half-open front/back vowel ; or (ii) open back/frontish vowel ¹	} {	(i) voice + plosion/affrication/ friction/nasality/flap/laterality/ semi-vowel/vowel
		(ii) voicelessness + palatality + friction
(i) { i: e: ɛ: u: o: ɔ: ị: ẹ: ɛ̣: ụ: ọ: ɔ̣:	} {	(i) b d g ; dʒ ; z ʈ ; β ɹ ʏ ; ɾ ; m n ; l j ; V ²
(ii) a: ɔ: a: ɔ: ¹		(ii) ɛ

m

long duration + clear/glottal-trill
voice quality +
(i) diphthong, or
(ii) open backish/frontish vowel,³ or
(iii) close-to-half-close front/back
centralized vowel

either (a) + nasality	voice + { friction + alveolarity ⁴ laterality/semi-vowel/ vowel
or (b) followed by nasal consonant	,, + homorganic plosion / nasality/affrication/friction

(a) { (i) { eĩ: aĩ: oĩ: aĩ: éĩ: áĩ: óĩ: áĩ: (ii) ǣ: ǣ: ǣ: ǣ: ³ (iii) ɿ: ɿ: ɿ: ɿ: ⁵	{ z l ; j ; V
---	------------------

(b) { (i) { eɪ: aɪ: oɪ: aɪ: éɪ: áɪ: óɪ: áɪ: (ii) ǣ: ǣ: (iii) ɿ: ɿ: ɿ: ɿ: ⁵	{ m b m n ɔ n d n ; z ⁶ ɲ dʒ ŋ g ŋ
--	---

¹ The degree of frontness (a ɔ ǣ) varies with the presence or absence of initial palatality and labiovelarity.

² β, ɹ, ʏ, and ɾ are peculiar to Fast-Tempo utterances.

³ Varies in degree of frontness in accordance with (i), presence or absence of initial palatality, (ii), consonantal versus vocalic nasality, e.g. mja:mmjǣ: mranmran quickly, mǣ:mmǣ: mhanmhan correctly.

⁴ A single example of labial friction (β) has also been noted in an m exponent, in the Fast-Tempo utterance kaĩ:βa:βi: koĩspāpri all right (cf. kaĩ:m̥ba:bi:).

⁵ In careful speech diphthongs ɪə and oə appear to be free variants of ɿ: and ɔ: respectively.

⁶ Limited to Slow-Tempo utterances ; cf. (a) above.

*First Syllable (Verb)**Second Syllable (Particle)*

k

short duration + clear voice
quality +

- (i) diphthong, or
- (ii) half-open/open front vowel, or
- (iii) close-to-half-close front/back
centralized vowel ;

(a) ¹

or (b) voicelessness + stop

- „ (c) „ + friction
- „ (d) voice + nasality
- „ (e) „ + laterality
- „ (f) voicelessness + nasality
- „ (g) „ + laterality
- „ (h) glottality + plosion

- { (i) voicelessness + plosion/affrication/
friction/nasality/laterality ²
- { (ii) voice + nasality/laterality/semi-
vowel/vowel
- { (i) voice
- { (ii) voicelessness } + homorganic plosion/
+ laxness ³ affrication

voicelessness + homorganic friction
voice + homorganic nasality
„ + laterality
voicelessness + nasality
„ + laterality
voice + vowel

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> (i) eɪ aɪ oʊ aʊ (ii) ɛ ʌ (iii) ɪ ʊ | <ul style="list-style-type: none"> (a) ¹ (b) p/t/k/tɕ (c) θ/s (d) m/n (e) l (f) ɱ (g) ʔ (h) ʔ | <ul style="list-style-type: none"> (i) p ph th k kh tɕ tɕh θ s m l ² (ii) m n l j V (i) b/d/g/dʒ (ii) ɸ/ɸ̥/ɸ̊/dʒ θ/s m/n l ɱ ʔ V |
| | | |

A comprehensive series of examples of k, m, and z exponents is given on pp. 91-2, 93-4, and 94-5 respectively.⁴

¹ Restricted to Fast-Tempo utterances.

² Occasional Fast-Tempo utterances have been observed in which the appropriate diphthongs and pure vowels have been followed by voice + plosion/friction, e.g. wɔdɛ: watsaŋ wears (cf. wɔdɛ:), pɔdɛla: poksala: does it go as far as (cf. pɔdɛla:).

³ Confined to Slow-Tempo utterances.

⁴ In Burmese orthography the z term of the Quality system is regularly represented, in the first of the two Syllables of the disyllabic Piece, by i, e, ai, ā, ū, -y, -ñ, e.g. sī: ride; we:, far; lā, come; way, buy; and by i, a, u, o, and ui, provided that they are syllable-final, e.g. ka, dance; rhi, be; pru, do; m is represented by -n, -ñ, -ñ, -m, and -m̄, e.g. mrañ, see; cañ:, mince; sum:, use; and k by -k, -c, -t, -p, e.g. khak, difficult; phrac, become; wat, wear.

The k Verb-and-Particle Piece differs from the z and the m in its relations with one of the Burmese Tone systems.¹ A detailed account of the Burmese Tone systems would be out of place here ; it is sufficient to mention that for Words that contain a monosyllabic Verb a two-term Tone system can be stated, whence Tone-1 and Tone-2 Words are distinguished, and that the k Verb-and-Particle Piece can be exemplified only in Tone-1 Words, e.g.

	z Piece	m Piece	k Piece
Tone 1 (ˊ-)	{ <i>thude</i> <i>thúde</i>	{ <i>thaonde</i> <i>tháonde</i>	<i>θaotde</i>
Tone 2 (-ˊ)	<i>thude</i>	<i>thaonde</i>	

(*thū:sañ* differs, *thoñ:sañ* pounds, *soksañ* drinks, *thusañ* beats, *thoñ'sañ* bends ; *thūsañ* is thick, *thoñsañ* traps).²

The Particles *bhū:*, *nhañ'*, and *lhyañ*, which appeared as second Syllable of the disyllabic Verb-and-Particle-Piece examples on page 85, and all other Particles that, like them, can immediately follow a Verb (and therefore be contained in a disyllabic Verb-and-Particle Piece), are clearly not exclusive to any one of the three types of Quality Piece considered there ; for they appear in all three. For Verbs it is otherwise : granted that the disyllabic Piece is of the grammatical type Verb-and-Particle, *swā:* can be exemplified, as *first* Syllable, only in a z Piece, *roñ:* only in an m Piece, and *sok* only in a k Piece. *swā:*, and all other monosyllabic Verbs that resemble it in this respect, can therefore be classified prosodically, in terms of the Quality system, as z-Piece, or z, Verbs, *roñ:*, and similar Verbs, as m-Piece, or m, *sok*, and similar Verbs, as k-Piece, or k. To classify a monosyllabic Verb as z, as m, or as k not only summarizes its range of Syllable-final phonetic variation (sixfold for the m, thirteenfold for the k, nil for the z ; p. 90), but also implies a corresponding limitation on the range of Syllable-initial phonetic variation of any following Syllable associated with it as second Syllable of a disyllabic Quality Piece.

In other grammatical types of disyllabic Piece too, e.g. the disyllabic Verb, it is only in the m Piece, for example, that an m Syllable can be the *first* Syllable of the Piece, though an m Syllable is unrestricted in its occurrence as *second* Syllable, e.g. the m Verb Syllable *koñ:* as second Syllable of the z Piece *swā:koñ:* (*θwagaō*) *swā:lim'mañ* he may well go, of the m Piece *koñ:koñ:* (*kaongaō*) well, of the k Piece *sokkoñ:* (*θaokgaō*) *soklim'mañ* he may well drink, and of the Weak-Stress-Syllable Piece *makon:(bhū:)* (*məkaom-*) it is not good. Corresponding relations hold between the z or the k Verb and the z, m, or k disyllabic Piece.

These symbols, though orthographically speaking part of the Verb Syllable, provide a key to the pronunciation of both Syllables of the disyllabic Quality Piece, and can therefore be considered to have a prosodic function.

¹ Sprigg, 'Junction,' p. 128.

² The pitch patterns shown are appropriate to one-Word Sentences ; they are not the only possible patterns for these Tone-1 and Tone-2 Words.

Though the Particles *bhūs*, *nhañ'*, and *lhyañ* cannot be classified, as z, m, or k, from their membership of the Verb-and-Particle disyllabic Piece (p. 89), *bhūs* and *nhañ'* can be classified as z-Piece, and *lhyañ* as m-Piece, on much the same grounds as Verbs, from their membership of disyllabic Particle-and-Particle Quality Pieces in which each of them is followed by another Particle, e.g. :

z : *nhañ'* (*maswā:*)*nhañ'to'* -éd- ; *bhūs* (*makon:*)*bhūs:lā:* -ul-
 m : *lhyañ* (*swā:*)*lhyañ:lā:* -ūl- ; *ūs* (*swā:*)*ūs'to'* -oond-
 k : *tat* (*mapro*)*tatpā(bhūs)* -apb- ; *phrac* (*swā:*)*phracsañ* -itd-

III. Variation in the Phonetic Form of Verbs : Junction, Juncture, Tempo, and Aspiration Systems

The examples on p. 85 have been used to illustrate sequences of interconnected features (p. 86) ; they also show that some lexical items, both Verb (*ron:*, *sok*) and Particle (*bhūs*), have variant phonetic forms. The Particle *bhūs*, for example, has four, one (*bu*) appropriate to both the z and the m Piece, one (*βu*) to the z Piece alone, but only in Fast-Tempo utterances, one (*mu*) to the m Piece only, also only in Fast-Tempo utterances, and the fourth (*phu*) only to the k Piece. The Verb *ron:* has three phonetic forms : *jaom*, *jaon*, *jaō* (to which could be added *jaon̄*, *jaon̄̄*, and *jaon̄̄̄*), each appropriate to an m Piece, but to a prosodically different type of m Piece ; and the Verb *sok* has three forms : *θaop'*, *θao*, *θaon* (to which could be added *θaoθ*, *θaok'*, *θaot'*, *θaot̄'*, *θaom*, *θaom̄*, *θaos*, *θaol*, *θaol̄*, and *θao'*), each appropriate to a prosodically different type of k Piece.

The difference in phonetic form of the Particle *bhūs* can be completely accounted for by reference to the three-term Quality system (z, m, k) and to the two-term Tempo system (f, from fast, and s, from slow) ; but in order to account for the thirteenfold difference in the phonetic form of *sok*, and the sixfold difference in the phonetic form of *ron:* (in association with phonetic differences in the initial of the following Syllable, *bhūs*, *sañ*, *lhyañ*, etc.) four further prosodic systems are needed : Junction, Juncture, Tempo, and Aspiration.

The Junction system has been dealt with in detail elsewhere ; and a brief mention is all that is needed here.¹ It comprises two terms, Interverbal Junction and Intraverbal, so named because the exponents of the Interverbal term correlate with grammatical Word boundaries, and those of the Intraverbal with absence of grammatical Word boundaries. The phonetic features that provide the exponents of either term must be drawn from two Syllables for the Intraverbal term (disyllabic Intraverbal Piece) ; for the Interverbal term too they are drawn from two Syllables (disyllabic Interverbal Piece), except for utterance-initial and utterance-final Interverbal Junction, in which of necessity only one Syllable can be characterized by Interverbal-Junction features.

¹ Sprigg, 'Junction', pp. 104-38.

The phonetic forms of *roñ:* and *sok* appropriate to Interverbal Junction are *jaõ*, with Syllable-final nasality of vowel, and *θao'*, with Syllable-final glottal occlusion, respectively ; all six phonetic forms of *roñ:*, and all the phonetic forms of *sok* except *θao'*, are appropriate to Intraverbal Junction (the phonetic form *jaõ* is, thus, common to either ; but the features immediately following this form are not for the most part the same for *jaõ* in Interverbal Junction as in Intraverbal Junction) ; e.g. :

Inter. <i>jaõ</i>	<i>roñ:</i>	<i>jaõ piβi</i>	<i>roñ: pri:prī</i>
Intra. <i>jaõlau<tdzabi< i=""></tdzabi<></i>	<i>roñ:luikkraprī</i>	<i>jaõmbi</i>	<i>roñ:prī</i>
(Inter. : sell it ; he has sold it ; Intra. : they have sold it ; he is selling it) ;			
Inter. <i>θao'</i>	<i>sok</i>	<i>θao' piβi</i>	<i>sok pri:prī</i>
Intra. <i>θao(m)mε</i>	<i>sokmañ</i>	<i>θaoɸbi</i>	<i>sokprī</i>
(Inter. : drink it ; he has drunk it ; Intra. : he will drink it ; he is drinking it). ¹			

The Juncture system comprises the thirteen terms *p*, *m*, *t*, *n*, *c*, *l*, *j*, *ɲ*, *y*, *k*, *ŋ*, *s*, *v* (the names of the majority of the terms are, for convenience, taken each from the letter, or the letters, used to indicate that term in Burmese orthography, except that typographically unsuitable letters like *ñ* and *ñ*, which have diacritics, and *ky*, which is a digraph, have been passed over in favour of *ɲ*, *ŋ* and *j* respectively ; *v* is named from vowel) ; the Aspiration system comprises the two terms *h* and *h̄* (non-*h*). A complete statement of exponency is not attempted here ; but the sequences of phonetic features that would be drawn on for such a statement are illustrated in the sets of examples below and on pages 93-5 (the left-hand column contains the thirteen terms of the Juncture system, the next the two terms of the Aspiration system ; *f* and *s* are here the two terms of the Tempo system). The examples in the following table also illustrate the exponency of the *k* term of the Quality system (p. 88) :

<i>p</i>	{ <i>h</i> - <i>p'ph</i> - ; (f) - <i>Vph</i> -	- <i>θao(p')</i> phu	(<i>ma</i>) <i>sokbhū:</i> does not drink
	{ <i>h̄</i> - <i>p'p̄</i> - ; (,) - <i>p'b</i> -	<i>θaoɸp'p̄/ba</i>	<i>sokpā</i> please drink
<i>m</i>	{ <i>h</i> - <i>mp</i> - ; (,) - <i>Vmp</i> -	<i>θao(m)pa</i>	<i>sokmhā</i> drinking
	{ <i>h̄</i> - <i>mm</i> - ; (,) - <i>Vm</i> -	<i>θao(m)mε</i>	<i>sokmañ</i> will drink
<i>t</i>	{ <i>h</i> none for the Verb-and-Particle Piece		
	{ <i>h̄</i> - <i>t'd</i> - ; (f) - <i>t'd</i> -	<i>θao(t'd)/dε</i>	<i>soksañ</i> drinks
<i>n</i>	{ <i>h</i> none for the Verb-and-Particle Piece		
	{ <i>h̄</i> - <i>nn</i> - ; (f) - <i>Vn</i> -	- <i>θao(n)né</i>	(<i>ma</i>) <i>soknhañ'</i> do not drink
<i>c</i>	{ <i>h</i> - <i>ssh</i> - ; (,) - <i>Vsh</i> -	<i>θao(s)shε</i>	<i>sokchai</i> while drinking
	{ <i>h̄</i> - <i>ss</i> - ; (,) - <i>Vs</i> -	<i>θao(s)st-</i>	<i>sokca(rā)</i> drinkable
<i>l</i>	{ <i>h</i> - <i>ll</i> - ; (,) - <i>Vl</i> -	<i>θao(l)lū-</i>	<i>soklhu(pri)</i> about to drink
	{ <i>h̄</i> - <i>ll</i> - ; (,) - <i>Vl</i> -	<i>θao(l)lô</i>	<i>soklui'</i> on drinking
<i>k</i>	{ <i>h</i> - <i>k'kh</i> - ; (,) - <i>Vkh</i> -	- <i>θao(k')khī</i>	(<i>ma</i>) <i>sokkhañ</i> before drinking
	{ <i>h̄</i> - <i>k'g</i> - ; (,) - <i>k'g</i> -	<i>θao(k'g)/gε-</i>	<i>sokka(tañ:ka)</i> since drinking

¹ ' Junction ', pp. 119-21, 123-4.

η	{	h	none for the Verb-and-Particle Piece	
ɲ	{	h	" " " " " "	
j	{	h -t'tsh-	(f) -Vtsh- θaɔ(t')tshɯn-	sokkhyañ(sañ) wants to drink
	{	h -t'dz-	(,,) -t'dz- θaɔt'dz/dzã-	sokkra(sañ) they drink
y	{	h	no collocationally suitable example (see p. 95) ¹	
	{	h -Vj-	θaɔjĩ	soklhyañ if he drinks
s		-θθ-	(f) -Vθ- -θaɔ(θ)θe-	(ma)sokse:(bhū:) has not yet drunk
v	{	h	none for the Verb-and-Particle Piece	
	{	h -VV-	(s) -V'V- loɔ(ʔ) oon-	lupū:(toʔ) you do it, then

The above examples show that (i), where labiality and occlusion (p') are a final feature of the first Syllable, labiality and plosion are initial in the second (p Piece: -p'ph-, -p'ɸ-, -p'b-), and vice versa except in the h Piece in Fast Tempo; and the same sort of statement holds good for occlusion and plosion combined with alveolarity (-t'd-, -t'd-), velarity (-k'g-, -k'g-, -k'kh-), and palatality (-t'tsh-, -t'dz-, -t'dz); (ii), where friction and either alveolarity or dentality, nasality and either labiality or alveolarity, or laterality and alveolarity, are final features of the first Syllable, the same combination of features is initial in the second (-ss-, -ssh-, -θθ-; -mm-, -mp-, -nn-; -ll-, -ll-), and vice versa except in Fast-Tempo utterances; (iii), where glottality (ʔ), or a syllabic or non-syllabic vowel (V, j), is initial in the second Syllable, the final feature of the preceding Syllable is vocalic; (iv), where voicelessness combined with nasality or laterality is a feature of the first Syllable, it is also a feature of the second (-mp-, -ll-), and vice versa except in Fast-Tempo utterances; (v), where, in Fast-Tempo utterances, partial voicelessness is a feature of the vowel of the second Syllable (V, alias h), the final feature of the first is vocalic (-Vph-, -Vth-, -Vsh-, -Vkh-, -Vtsh-). It is this last sequence of associated features, extending over two Syllables, that provides grounds for treating the Aspiration system as statable for a disyllabic Piece rather than for a monosyllabic.

The table above not only gives examples of each term of the Juncture, Tempo, and Aspiration systems; it also shows that the s term of the Juncture system correlates with neither of the terms of the Aspiration system: the behaviour of dental-initial Syllables is such that it does not lend itself to classification in terms of the latter system (h, h); and the solution adopted in 'Junction in Spoken Burmese' (pp. 111-16) still seems more satisfactory than any other.

The Junction, Tempo, and Aspiration systems provide the means of accounting for the twelvefold Syllable-final phonetic diversity of *sok* and other k-Piece Verbs (p. 90) in the Verb-and-Particle type of Piece. The k Verb is characterized by the following Syllable-final features in accordance with differences in the type of Junction Piece, Aspiration Piece, or Tempo Piece:

¹ For collocation see J. R. Firth, 'Modes of Meaning', *Essays and Studies 1951* (The English Association), pp. 123 ff.

<i>features</i>			<i>type of Juncture Piece</i>
occlusion +	{ labiality	p'	p
	{ alveolarity	t'	t
	{ palatality	tʃ'	j
	{ velarity	k'	k
nasality +	{ labiality	m m̥	m
	{ alveolarity	n	n
laterality +	alveolarity	l l̥	l
friction +	{ alveolarity	s	c
	{ dentality	θ	s
vowel		V	{ v
			{ y (also ĥ)
			{ p, t, j, k if also h } if f
			{ m, n, c, l, s }
			<i>type of Aspiration Piece</i>
voicelessness	m̥ l̥		h if also m, l
voice	m l n		ĥ ,, ,, m, l, n
vowel	V		{ ĥ ,, ,, y, v
consonant	p' t' tʃ' k'		{ h ,, ,, p, t, j, k } if f
			{ ĥ ,, ,, ,, ,, ,, ,, }

Where the disyllabic Piece is not also k but m (of the Quality system ; p. 87) the exponents of the terms p, m, t, n, c, l, k, j, y, s, and v of the Juncture system (there being no examples of ŋ or ɲ in the Verb-and-Particle type of Piece), and of the terms of the Aspiration and the Tempo systems, nearly all differ from those given above (p. 91-2) ; and certain terms have identical exponents :

p	{ h -mb- ;	(f) -mm-	-jaomb/mu	(ma)roñ:bhū: does not sell
	{ ĥ ,,	(,,) ,,	jaomb/ma	roñ:pā(sañ) sells
m	{ h -mm-		jaomma	roñ:mhā selling
	{ ĥ ,,		jaomme	roñ:mañ will sell
t	ĥ -nd- ;	(,,) -nn-	kaond/nε	koñ:sañ is good
n	ĥ -nn-		-jaonné	(ma)roñ:nhan' do not sell
c	{ h -ñz- ;	(s) -nz-	jaō(n)zε	roñ:chai while selling
	{ ĥ ,,	(,,) ,,	jaō(n)zɪ-	roñ:ca(rā) for selling
l	{ h -ñl-		l̥l̥l̥	(muigh:) lañ:lhu about to dawn
	{ ĥ ,,		haōl̥l̥	hoñhui' because it barked
k	{ h -ng- ;	(f) -ɲɲ-	-jaong/ɲl̥	(ma)roñ:khan before selling
	{ ĥ ,,	(,,) ,,	jaong/ɲε-	roñ:ka(tañ:ka) since selling
j	{ h -pdz-		jaondzɪn-	roñ:khyañ(sañ) wants to sell
	{ ĥ ,,		jaondzɪ-	roñ:kra(sañ) they sell

y {h no collocationally suitable example (but see p. 95)			
y	{h - $\tilde{V}j$ -	ja \tilde{o} j \tilde{r}	ron: <i>lhyan</i> if he sells
s	- $\tilde{n}\tilde{o}$ -	ja \tilde{o} $\tilde{n}\tilde{o}$ -	(ma)ron: <i>se:(bhū:)</i> has not yet sold
v	{h - $\tilde{V}V$ - ; (s) - \tilde{V}' -	sa \tilde{o} (\tilde{r}) \tilde{o} om-	con' <i>ū:(mañ)</i> I will go on waiting

From the above table it will be seen that in Verb-and-Particle Pieces that are also m (of the Quality system), (i) the exponent of h nowhere differs from the exponent of \tilde{h} (but compare pp. 91-2) ; (ii), in Fast-Tempo utterances p and t can have exponents that do not differ from the exponents of m and n respectively (-mm-, -nn-)¹ ; (iii), where labiality is a feature of the first Syllable, so also is it of the second, and vice versa (p Piece : -mb-, -mm- ; m Piece : -mm-) ; a corresponding statement can be made for velarity and dentality (-ng-, -nn- ; - $\tilde{n}\tilde{o}$ -), but not necessarily for alveolarity and palatality (t Piece : -nd-, -nn- ; n Piece : -nn- ; j Piece : - $\tilde{n}dz$ - ; but c Piece : - $\tilde{V}z$ - ; l Piece : - $\tilde{V}l$ - ; y Piece : - $\tilde{V}j$ -), and not at all for glottality (- \tilde{V}' -), though in Slow-Tempo utterances the Syllable-initial alveolarity of the c Piece is matched by Syllable-final alveolarity (-nz-).

The sixfold Syllable-final diversity of *ron:* and other m Verbs (p. 90) can be accounted for by reference to the Juncture and to the Tempo system (but not the Aspiration system ; cf. the k-Piece examples, p. 93). m Verbs are characterized by the following Syllable-final phonetic features according to the type of Juncture and Tempo Pieces in which they are exemplified :

features		type of Juncture Piece
labiality	m	p, m
alveolarity	n	{ t, n c if also s (Tempo)
velarity	ŋ	k
palatality	ɲ	j
dentality	ɳ	s
nasality of vowel	\tilde{V}	{ c if not also s (Tempo) l, y, v

In the z Piece the exponents of the terms of the Juncture, Tempo, and Aspiration systems are :

p	{h - $\tilde{V}b$ - ;	(f) - $\tilde{V}\beta$ -	- θ wab/ β u	(ma)swā: <i>bhū:</i> does not go
	{ \tilde{h} „	(,,) „	θ wab/ β u	swā: <i>pā</i> please go
m	{h - $\tilde{V}m$ -		θ wama	swā: <i>mhā</i> going
	{ \tilde{h} „		θ wame	swā: <i>mañ</i> will go
t	{h - $\tilde{V}d$ - ;	(,,) - $\tilde{V}f$ -	θ wad/ <i>re</i>	swā: <i>sañ</i> goes
n	{h - $\tilde{V}n$ -		- θ wan \acute{e}	(ma)swā: <i>nhan'</i> do not go

¹ Provided that the exponents of two terms of the same system differ in at least one context, there is, in prosodic analysis, no bar to their having identical exponents in some or all of the remaining contexts. Phonetic *exponents* are not to be confused with phonetic *criteria* (cf. 'Vowel Harmony in Lhasa Tibetan', *BSOAS*, 24, 1, 1961, pp. 117-18, 131-32).

c	{h -Vz-		θwaze	<i>swā:chai</i> while going
	{h̄ ,,		wɛzi-	<i>wayca(rā)</i> for buying
l	{h -Vl-		θwalú-	<i>swā:lhu(prī)</i> about to go
	{h̄ ,,		θwaló	<i>swā:lui'</i> because it went
k	{h -Vg- ;	(f) -Vy-	-θwag/yĩ	(<i>ma</i>) <i>swā:khañ</i> before it goes
	{h̄ ,,	(,,) ,,	θwag/yə-	<i>swā:ka(tañ:ka)</i> since going
j	{h -Vdz-		θwadzin-	<i>swā:khyañ(sañ)</i> wishes to go
	{h̄ ,,		θwadzǎ-	<i>swā:kra(sañ)</i> they go
y	{h -Vɛ-		θesa-	<i>serhā(prī)</i> he is no more
	{h̄ -Vj-		θwajĩ	<i>swā:lhyañ</i> if it goes
s	-Vð-		wede-	<i>wɛ:se:(sañ)</i> it is still a long way off
v	h̄ -VV- ;	(s) -V'-	θwa(ʔ)oon-	<i>swā:ū:(to')</i> you go, then

Where the Verb-and-Particle Piece is also z, (i), the exponents of h and of h̄ are identical (but cf. the k, pp. 91-2) ; (ii), the features labial friction, velar friction (β, γ), and flap (r) are part of the exponency of p, k, and t respectively in Fast-Tempo utterances ; (iii), in Verb-and-Particle Pieces that are also z, unlike k and m (pp. 91-2, 93-4), the localization features labiality, alveolarity, velarity, etc. are confined to the second Syllable of the Piece.

Not only does the Verb-and-Particle type of Piece provide a means of accounting for the Syllable-final phonetic diversity of k Verbs and m Verbs, through the Juncture, Tempo, and Aspiration systems (pp. 92, 93, 94) ; it also provides a means of classifying prosodically those Particles which can immediately follow the Verb within the Word. Certain of those Particles have already been classified prosodically in terms of the Particle-and-Particle Quality Piece, which associates each with the following (Particle) Syllable (p. 90) ; they can also be classified in terms of the Juncture and Aspiration Pieces, which associate them with the preceding Syllable, whether Verb or Particle. As second Syllable *bhū:*, for example, is restricted to the p Juncture Piece (and is therefore characterized by initial labiality, together with plosion, friction, or nasality : b/β/m/ph), and to the h Aspiration Piece (whence initial aspiration or non-aspiration) (pp. 91, 93, 94) ; *nhañ'* is restricted to the n Juncture Piece (whence initial alveolarity together with nasality : n) and to the h̄ Aspiration Piece (whence initial voice) ; *lhyañ* is restricted to the y Juncture Piece (initial palatality together with either friction or a non-syllabic vowel : j) and to the h̄ Aspiration Piece (initial voice). The three Particles *bhū:*, *nhañ'*, and *lhyañ* can therefore be formulated, in part, as ph, nh̄, and yh̄ respectively.

Particle Syllables, except for *ma* (Negative) and *a* (Nominalizing), are necessarily in Intraverbal Junction with a preceding Syllable (Verb or Particle), e.g. *makon:bhū:lā:*, is it not good, in which the Particle Syllable *bhū:* is preceded by the Verb Syllable *kon:*, and the Particle Syllable *lā:* by the Particle Syllable *bhū:*, and there is therefore no difficulty in providing examples in which they are

contained in disyllabic Juncture and Aspiration Pieces, in the light of which they can be given a Juncture classification, though not always an Aspiration classification (it is only in disyllabic Aspiration Pieces that are also k Quality Pieces that there are criteria for distinguishing h from ĥ, pp. 91-2). Verb Syllables, on the other hand, are not necessarily in Intraverbal Junction with a preceding Syllable; on the contrary they are commonly Word-initial, and therefore in Interpersonal Junction with the preceding Syllable, if any, e.g. *swā:lhyāñ*, if you go, in which the Verb Syllable *swā:* is not preceded by another Syllable within the Word. When Word-initial, Verb Syllables clearly cannot be contained in a (disyllabic) Juncture Piece or Aspiration Piece; for there is no preceding Syllable within the Word to combine with them; but Verb Syllables are not, however, exempt from classification in terms of these two systems; for there are types of Word in which another Syllable does precede them: (i), disyllabic Verb, e.g. *pumban-*, *pañpan:(sañ)*, he gets tired out, from which *pan:* can be classified as p (Juncture), but is indeterminate as regards the Aspiration system (p. 93); (ii), doubled Verb, e.g. *pjəp'bjə'*, *pyakpyak*, ruinous, from which *pyak* can be classified as p (Juncture) and ĥ (Aspiration); (iii), disyllabic or trisyllabic Noun, e.g. *luðəw-*, *lūsok(re)*, drinking-water, from which *sok* can be classified as s (Juncture); (iv), Negative-Particle Piece or Nominalizing-Particle Piece, e.g. *mjaəw-*, *maron:(nhañ')*, do not sell; *əjaəw*, *aron:*, selling, from which *ron:* can be classified as y (Juncture) and ĥ (Aspiration).

IV. Prosodic Systems statable for Monosyllabic Pieces : Labialization, Palatalization, Voice Quality, Yodization

The remaining four prosodic systems, termed Labialization, Palatalization, Voice Quality, and Yodization, apply to monosyllabic Pieces (or Syllables). The first of these, the Labialization system, is designed to associate particular Syllable-initial features with the appropriate vowel features; it comprises the five terms b (so named from backness), s (from spreading), f (from fronting), c (from centralized), and ə (shwa). This system is dealt with elsewhere in this volume¹; and the present description is limited to an account of one term only, the b. The b type of Syllable has been chosen partly because it is one of the few types of Labialization Syllable for which V systems can be stated, and partly because the majority of the Verb examples introduced so far (*sok*, *ron:*, *pui'*, etc.) are members of the b category.

The b term of the Labialization system associates lip-rounding as a vowel feature (u, o, ə, oo, əw, though only partial in the case of əw) with certain other Syllable-initial features, and particularly with (i), lip-rounding (except for Syllables in əw and palatal-initial Syllables), e.g. *ku kū:* cross, *khə khô* (but *əwəw' sok* drink, *pjə pru* do), and (ii), potential initial glottality ('), e.g. *'ə ô* shout, *'əw' up*

¹ 'A Comparison of Arakanese and Burmese Based on Phonological Formulae'.

cover, 'aõ *on* overcome. This latter feature is enough to exclude from the *b* category monosyllabic Verbs in *o*, e.g. w^o ' *wat* wear, p^jõ *prwan* is accomplished, θ^o ' *swat* put into, in spite of their having lip-rounding as a vowel feature; for the vowel *o* cannot be preceded by ' ; and there is therefore no Syllable-initial sequence *'o-.¹

The *b* term has the additional function of associating with the vowels *u*, *o*, *ə*, *oo*, and *ao* such Syllable-initial features as velarity (*k* *ŋ*) and both palatalized and non-palatalized labiality (*pj* *mj* ; *p* *m*), features that are excluded from certain types of Labialization Syllable (for examples of the *b* Syllable see p. 98).

For every *bm* and *bz* Verb a further distinction, in voice quality, can be made, and all such Syllables classified as either *g* (from glottal-trill) or *ḡ*, in accordance with a two-term Voice-Quality system; for *bk* Syllables, on the other hand, no such distinction can be made.² The exponent of *g* is glottal-trill (or 'creaky') voice quality, e.g. p^jũ *pru* do, sãõ *coñ* wait, which are invariably characterized by glottal-trill voice quality; that of *ḡ* is clear voice quality, except in the first Word of certain two-Word Noun phrases, in which it is glottal-trill, e.g. the Verb Syllable *koñ* in məkãõ dɛgaõ *makoñ takon* fairly good, and *mhi* in mɛmĩ tɛmĩ *mamhi*(') *tamhi* not quite reaching.

Some *b* Verb Syllables have a single initial consonant, e.g. *p*, *tə*, *j*; others have a Syllable-initial sequence, in which a non-syllabic front vowel (or semi-vowel; *j*) or a voiceless palatal fricative (*j*) is associated exclusively with labiality (*pj* *pj* *mj* *ɲj*). The syntagmatic association of labiality with this front, or palatal, feature, in contrast with Syllables not characterized by any such sequence, is stated through the two-term Yodization system (*y*, *ȳ*), the exponent of *y* being labiality (*p* *m* *ɲ*) and a following non-syllabic front vowel or a palatal fricative (*j* *j*), while the exponent of *ȳ* is labiality/dentality/alveolarity/palatatality/velarity/glottality and an immediately following syllabic vowel (*pV* *θV* *nV*, etc.), e.g.

y : p^ju- *phrũ*(sañ) is white ; m^jjaot- *mhrok*(sañ) raises ;
ȳ : pu- *pũ*(sañ) is hot ; jaot- *rok*(sañ) arrives.

ȳ correlates with the Juncture components *t*, *n*, *c*, *l*, *k*, *ŋ*, *j*, *ɲ*, *y*, *s*, and *v*, and can therefore be omitted from a formula that includes any of them (cf. also the Initial system, p. 100).

Every *b* Syllable can also be further classified, by reference to the two-term Palatalization system, as *p* or as *p̄*. The exponent of the *p* term associates the

¹ *b* is regularly represented in Burmese orthography by *ũ*(*ɛ*), *u*, *ui*', *ui*ɛ, *o*(*ʔ*), and *ô*, and by *ui* when syllable-final (and not, therefore, followed by *k* or *ŋ*).

² There is some evidence that presence or absence of syllable-initial glottal plosion in Intraverbal Junction is to be associated with glottal-trill or with clear voice quality respectively in the preceding Syllable, e.g. (glottal-trill), p^o 'oõn- pui'ũ:to' send it, then, sãõ 'oõm- coñ'ũ:mañ I shall go on waiting; cf. (clear), neoõn- neũ:to' wait for me, then, naĩãõ nuiñon so as to win. If regular, this syntagmatic association of features drawn from two Syllables would make it necessary to state the Voice-Quality system for a disyllabic rather than a monosyllabic Piece.

following three features : (i), Syllable-initial palatality (p̄j m̄j t̄s n̄ s̄ j̄) ; (ii), advanced vowel (ū ō ə̄ oō ə̄ō) as compared each with the phonetically corresponding type of vowel in a p̄ Syllable ; (iii), less rounding of vowel (ū ō ə̄ oō), again as compared with the phonetically corresponding types of vowel in the p̄ Syllable. The exponent of the p̄ term associates Syllable-initial non-palatality (p̄ m̄ t̄ n̄ s̄ l̄ k̄ ŋ̄ θ̄ h̄ '̄) with vowel features the reverse of those stated for p̄ at (ii)–(iii) above (ū ō ə̄ oō ə̄ō), e.g.

p : p̄j̄ū *pru* do, jāō *ron̄s̄* sell ; p̄ : pū *pū* hot, θ̄ə̄ō' *sok* drink.

p correlates with the Juncture components j, n, and y, and with the Yodization component y, and can be omitted from any formula containing any of these more specific components ; p̄ can, on corresponding grounds, be dispensed with in any formula containing one of the Juncture components t, n, c, l, k, ŋ, s, v, or the Yodization component ȳ ; in fact the Palatalization components p and p̄ are always omissible under those conditions.

V. Phonematic Systems

The Syllable-initial and Syllable-final phonetic features of most types of Labialization Syllable are to such an extent interdependent that their phonetic features are completely accounted for by prosodic statement ; and there is no need to have recourse to phonematic analysis at all (p. 80). Thus, all the components of the formulae of s Syllables, f Syllables, c Syllables, əm Syllables, and ək Syllables (p. 96) are prosodic ; and the only types of Syllable that require post-prosodic (i.e. phonematic) analysis are the b and the əz. The examples given here are of the b-Piece, or b-Syllable, phonematic systems.

The V systems of b Syllables differ according as the b Syllable is also classifiable as z, m, or k (of the Quality system, p. 89). For zb Syllables there is a three-term system : U, O, Ω ; for mb and kb Syllables the V system is two-term : U, O.¹ The exponents of the terms in these V systems are :

z	U : closeness	pu	<i>pūsāñ</i> is hot ;	pjū	<i>prusañ</i> does
	O : half-closeness	pó	<i>pui'sañ</i> sends ;	lo	<i>luisañ</i> wants
	Ω : half-openness	pjo	<i>prosañ</i> says ;	sə	<i>cosañ</i> is early
m	U : half-closeness	ŋōon	<i>num'sañ</i> stoops ;	toon	<i>tunsañ</i> trembles
	O : openness	jaon	<i>ron̄s̄sañ</i> sells ;	sāon	<i>con'sañ</i> waits
k	U : half-closeness	loot'	<i>lupsañ</i> works ;	joot'	<i>yutsañ</i> is inferior
	O : openness	θaot'	<i>soksañ</i> drinks	jaot'	<i>roksañ</i> arrives

¹ Despite identity of symbol it is not, of course, legitimate to attempt to identify either of the two terms U and O of the two-term system (mb, kb) with the homographic terms of the three-term system (zb) : they differ in commutability, and, therefore, in systemic value. Cf. Allen, 'Relationship', p. 84 : 'They are "phonological" in the sense that their systems are relevant to the structural positions for which they are established'.

(since the V term Ω is restricted to the z Syllable, the component z can be omitted without ambiguity from any formula that contains Ω ; and b can, similarly, be omitted from any formula that contains U, O, or Ω , p. 82).

Tibetan

In the modern spoken dialects of Tibetan the comparatist has to face a problem that does not arise in Burmese, the problem of grammatically distinct forms for certain Verbs. For some Tibetan Verbs two or even three such forms have to be distinguished ; and Tibetan Verbs of this type thus offer the comparatist a choice of grammatical forms, Present, Perfect, and in some cases Imperative, as well as a choice of phonetic variants of a single grammatical form.

Shafer solves this problem with regard to the verbal forms of classical Tibetan (his Old Bodish), in which as many as four forms are distinguished for some verbs, e.g. *skem*, *bskams*, *bskam*, *skom*, dry, by taking as basic either the perfect root itself or the perfect root modified by removal of the *s* suffix¹ ; but for the dialects of spoken Tibetan the aim should, in my opinion, still be to set up for each Verb through prosodic analysis a lexical-item phonological formula that shall subsume all the variant phonetic forms, regardless of whether these variants do or do not reflect differences of grammatical category.

I. Lhasa Dialect

This is not the place for a detailed account of the various prosodic systems that make it possible to construct such a formula ; but I will briefly illustrate some of these systems, first from the Lhasa dialect, and principally from the following three Verbs : (a), *srub/srubs*, churn ; (b), *bzo/bzos*, make ; (c), *blta/bltas/lto*s, look at.²

The complete lexical-item phonological formulae for these three Verbs (with omissible components enclosed in brackets ; p. 82) are :

- (a) ($\bar{h}1$)1wcp̄zS_z so/sy: (b) ($\bar{h}1$)2woṽbS_z so/so/sø:
(c) (oṽ1r)1əḥbT_z ta/ta/tæ: (p. 82).

The components 1 and 2 of these formulae refer to the terms of a two-term Tone system applicable to the Verb, or to the Verb-and-Particle, Word : Tone-1 Verbs are exemplified only in Tone-1 Words, and Tone-2 Verbs only in Tone-2 Words.³

¹ e.g. 'Newari and Sino-Tibetan', *Studia Linguistica*, 6, 1952, p. 95.

² For the system of transliteration see Turrell Wylie, 'A Standard System of Tibetan Transliteration', *HJAS*, 22, 1959, pp. 261-67.

For the orthographic problem presented by the modern spoken Tibetan dialects see 'Verbal Phrases in Lhasa Tibetan—I', *BSOAS*, 16, 1, 1954, p. 135, n. 1.

³ For the exponents of these two terms see 'Verbal Phrases', *ibid.*, pp. 141-46.

ə and w are terms of a three-term Labialization system (ə, w, y) that unites rounding-spreading, and such associated features as velarity, with the appropriate vowels (rounded, non-rounded) of the Verb Syllable, and, in the case of certain Particle Syllables, extends to the following Syllable, e.g. w, *səŋy- srub-kyi-red* he will churn ; ə, *taŋə- blta-gi-red* he will look at ; y, *sɔŋy- zer-gyi-red* he will say. In these three examples the Particle Syllable *kyi/gyi/gi* is characterized by either lip-rounding (ŋy), lip-spreading + frontness (ɔ), or lip-spreading + non-frontness (gə) according as it is in a w, a y, or a ə disyllabic Piece (cf. also Burmese, pp. 96-7).¹

ḡ (non-p) refers to the Palatalization system, the two terms of which (p, ḡ) relate Syllable-initial palatality or non-palatality to relative frontness or backness of vowel respectively (cf. Burmese, pp. 97-8). Since the phonematic unit T is restricted to ḡ Syllables, ḡ can be omitted from formulae that contain T.

h and ḥ (non-h) refer to the two terms of the Aspiration system, which associates partial voicelessness, or complete voicing, of vowel (ṽ, Ṽ) with the appropriate Syllable-initial consonant features (cf. Burmese, pp. 91-95). S implies ḥ.

b, and the component z preceding one of the phonematic components (example (a) only), are terms of the Initial system, a three-term prosodic system (b, n, z) established to account for Syllable-initial single consonants and Syllable-initial sequences in Intraverbal Junction (for Intraverbal Junction see p. 90), and in this instance the Syllable-initial sequence *ps* that characterizes *bzo/bzos* in e.g. *ŋəpsəx, dŋgo-bzo-ba*, shoemaker, in Intraverbal Junction (cf. the Syllable-initial single consonant *s* in Interverbal Junction, e.g. *sədzix, bzo-rtsis*, intending to make, and the other examples at (b) on p. 101 below), and the Syllable-initial sequence *pt* that characterizes *blta/bltas/lto*s in Intraverbal Junction in e.g. *səptə, bzo-blta*, appearance (cf. Syllable-initial *t* in Interverbal Junction in the examples at (c) on p. 101 below). There is no evidence of anything other than a Syllable-initial single consonant (*s*) for *srub/srubs* in Intraverbal Junction, whence its classification as *z* (from zero).

The component *z* that follows the phonematic components (S, S, T), on the other hand, is a term of an eight-term Quality system (z, g, ŋ, d, n, b, m, r) that associates the vocalic features of Verb Syllables with their final consonantal features, if any, and, further, with both consonantal and vocalic features of certain following Particle Syllables (cf. Burmese, pp. 85-88). The following examples illustrate the sort of sequences of syntagmatically associated features that provide the justification for this system ; these examples are all disyllabic Verb-and-Particle Pieces in which the Verb Syllable is *w* (and therefore characterized by lip-rounding ; above) and in which the Particle category is represented by *pa/ba* (Nominalizing) :

¹ See also ' Verbal Phrases ', *BSOAS*, 16, 2, pp. 320-2, 338-9 ; *BSOAS*, 16, 3, pp. 566-8.

z	g	ŋ	d	n	b	m	r	
sə:	lɔ:ɣɐ	sɔŋɐ	tɕhɔ:bə	khɔmbə	thɔbə	zɔmbə ¹	kɔrɐ	kɔrɐ
<i>bzo-ba</i>	<i>klog-pa</i>	<i>gsung-ba</i>	<i>mchod-pa</i>	<i>gon-pa</i>	<i>thob-pa</i>	<i>'dzom-pa</i>	<i>skor-ba</i>	<i>skol-ba</i>
making	readg.	speakg.	eatg.	wearg.	gettg.	meetg.	circlg.	boilg.

These examples show the interdependence of (i), a closer central vowel (ə) with preceding labiality (b), in the d, n, b, or m Piece, but a more open central vowel (ɐ) with non-labiality (g ŋ r), in the g, ŋ, or r ; (ii), long vowel duration (ɔ:) and velar plosion (g), in the g Piece, as compared with short vowel duration (ɐ ɐ) and nasality (ŋ m), or friction (r), in the ŋ, n, m, or r, and either long or short vowel duration (ɔ: ɐ) with labial plosion (b), in the d or the b ; (iii), backness (ɔ: ɐ) with velarity (g ŋ), in the g or in the ŋ Piece, and also with absence of intervocalic consonant (ɔ:), in the z, as compared with either backness (ɐ) or frontness (ə) with labiality or alveolarity (b m r), in the d, n, b, m, or r ; (iv), half-openness (ɔ:) with velar plosion (g) and with absence of intervocalic consonant, in the g or the z Piece, but openness (ɐ) with velar nasality (ŋ), with labiality (b m), and with alveolarity (r).

All three of the Verbs chosen to illustrate lexical-item phonological formulae in Lhasa Tibetan ((a) *sru*b/*sru*bs ; (b) *bzo*/*bzo*s ; (c) *blta*/*blta*s/*ltos* ; p. 99) are exemplified in Verb-and-Particle Pieces only of the z type. z-Piece, or z, Verbs have been chosen because of their relative complexity : the majority of them have at least as wide a range of variation in phonetic form as the g-Piece, ŋ-Piece, or other types of Verb, and also differ from them in generally requiring more than one grammatical form to be established (the g, the ŋ, and the remaining non-z types of Verb, except for some of those which are also classified as ə—p. 102—are single-form).

The variant phonetic forms of the three Verbs are :

- (a) sɔ sy: ; (b) sɔ/sɔ sɔ: ; (c) tɕ/tɕ tɕ:

the first of each pair of phonetic variants is appropriate, for example, to Present and Future Clauses (columns (i)–(ii) below), except for Imperative-Affirmative, while the second is appropriate to Past Clauses (col. (iii)), and to Imperative-Affirmative Clauses (col. (iv)) except for ə Verbs ((c) (iv) ; p. 102 below) (crucial features are given in brackets immediately after the example from which each has been abstracted) :

	(i)		(ii)		(iii)		(iv)
(a) <i>sogyre</i> :	(sɔ-)	sɔbɐrɐ	(sɔ-)	sy:bɐrɐ	(sy:-)	sy:	
(b) <i>sodzi</i> :	(,,)	sɔbɐrɐ	(sɔ-)	sə:bɐrɐ	(sə:-)	sə:	
(c) <i>tagidu</i> :	(tɕ-)	tɕabɐrɐ	(tɕ-)	tɕ:tɕabɐrɐ	(tɕ:-)	tɕ:	

¹ The n and the m examples are not distinguished by syntagmatically associated features in the Verb-and-Nominalizing-Particle type of Piece ; but they are in Pieces in which the Particle category is represented by *song*, e.g. (n) *khə:sɔ̃*, *gon-song*, he wore ; (m), *zɔmsɔ̃*, *'dzoms-song*, they assembled : the n Piece is distinguished from the m by long vowel duration, frontness, and absence of oral occlusion (–ə:s– ; cf. –ɔms–).

((a) *srub-kyi-red* they will churn, *srub-pa-red* they churn, *srubs-pa-red* they churned, *srubs* churn ; (b) *bzo-rtsis* intending to make, *bzo-ba-red* they make, *bzos-pa-red* they made, *bzos* make ; (c) *blta-gi-'dug* they are looking, *blta-ba-red* they look, *bltas-pa-red* they looked).

As between columns (i) and (ii) example (a) does not vary (sɔ-) ; but (b) and (c) show a variation in degree of aperture between a closer degree, in (i) ((b) ɔ ; (c) ʌ), and a more open degree, in (ii) ((b) ɔ̃ ; (c) ʌ̃), according as each is contained in a c (from close) or in an o (from open) disyllabic Closure Piece, in harmony with vowel features of the following Syllable (c-Piece : ɣ i : ɪ ; o-Piece : ə).¹ This phonetic variation in examples (b) and (c), and Verbs like them, can be formulated as c/o, i.e. exemplifiable in either the c or the o disyllabic Piece, as distinct from c Verbs, like type (a), which can be exemplified in the c disyllabic Closure Piece but not the o.

As between columns (i)/(ii) and (iii)/(iv) the difference in duration ((a) ɔ v. ɣ ; (b) ɔ/ɔ̃ v. ɔ̃ ; (c) ʌ/a v. ɛ), in association with a backness-frontness difference (the front vowel ʌ of example (c) (ii) is backer than the front vowel ɛ of (c) (iii) and could be represented in a more detailed transcription as ʌ̠), can be accounted for by setting up a Quantity system comprising s (from short : (a) ɔ ; (b) ɔ/ɔ̃ ; (c) ʌ/a) and l (from long : (a) ɣ ; (b) ɔ̃ ; (c) ɛ), whence s/l Verbs.

The phonological formulae given above for *srub/srubs* and *bzo/bzos* (p. 99, (a) and (b)), and their variant phonetic forms, have now been accounted for ; but there remains one of the forms of example (c) *blta/bltas/lto* ; tɔ̃(-), confined to Imperative-Affirmative Clauses. Certain ə-Piece Verbs, of all eight Quality-Piece types (z, g, ŋ, d, n, b, m, r), except that there is only one b-Piece example, have Imperative forms that are characterized by lip-rounding, to account for which at the phonological level of analysis a Rounding system is established comprising the two terms r (from rounding) and r̄ (non-r), e.g. :

<i>r</i>		<i>r̄</i>	
əz : tɔ̃ :	tʌ/ta	tɛ :	blta/bltas/lto (oɣ̃)l/sr/ṙlɛ̃hpTz look
əd : dɔ̃ :	dɛ:/dɛ :		bsdad/sdod (oɣ̃)r/ṙ2ɛ̃hzTd stay
ər : tɔ̃ :	tɛʌ:/tɛʌ : (tear)		bcar/gcor (oy)r/ṙlɛ̃hzJr visit

The only phonematic systems in Lhasa Tibetan are C systems ; there are no V systems (cf. Burmese, in which there are V systems but no C systems ; pp. 98-9).

One of the results of classifying Verbs in terms of the Quantity, Closure, and Rounding systems (above) has been the introduction of trigraphic components into the phonological formulae : certain Verbs have been classified as c/o, as opposed to c (Closure system), as s/l as opposed to s (Quantity system), and as r/ṙ as opposed to ṙ (Rounding system), according as each could or could

¹ For a detailed study see 'Vowel Harmony'.

not be exemplified in the disyllabic o Piece as well as the c, as an l Syllable as well as an s, and as an r Syllable as well as a \bar{r} . The trigraphic components c/o, s/l, and r/ \bar{r} are clearly more cumbersome than a monographic component would be ; and, in particular, the role of the oblique stroke, which associates the immediately preceding component with the immediately following component as alternatives, might mistakenly be understood as signifying that all the components preceding the oblique stroke were alternative to all those following it. Since, however, only two classes of Verb are distinguished by the c/o and the c, the s/l and the s, and the r/ \bar{r} and the \bar{r} components, i.e. the c-Piece-only, or c, class for example, as opposed to the non-c-Piece-only class (hitherto c/o), or the s-Syllable-only, or s, class as opposed to the non-s-Syllable-only class (hitherto s/l), and similarly with the \bar{r} class of Verb as opposed to the r/ \bar{r} , each of the cumbersome trigraphic components could without ambiguity be replaced by a monographic component formulating the potentialities of the alternative class. Thus, either \bar{c} (non-c) or o, for example, would serve the purpose of distinguishing what has hitherto been termed the c/o Verb class from its alternative, the c ; but o has in fact been adopted here as being typographically more convenient than \bar{c} .

The component o in the phonological formula of a Verb therefore indicates that that Verb can be exemplified not only in the o Piece but in both the o Piece and the c Piece equally, e.g. the o Verb *bzo/bzos* (formerly c/o) is exemplified in the c Piece *sodzi:*, *bzo-rtsis* (p. 101, (b) (i)) as well as in the o Pieces *səbə-* and *sə:rbə-* (*bzo-ba* and *bzos-pa* ; p. 101, (b) (ii)–(iii)). By the same principle s/l is from this point onwards replaced by l, and r/ \bar{r} by r, with l signifying the possibility of being exemplified as either an l or an s Syllable, and r as either an r or a \bar{r} Syllable. In this way the formulae on p. 102 are simplified to (o \bar{y})lrləhpTz, (o \bar{y})r2əhzTd, and (oy)r1əhzJr (the r component preceding each phonematic component refers to the r term of the two-term Rounding system, and the r following it, in the third formula, to the r term of the eight-term Quality system).

In certain formulae o (formerly c/o) could be dispensed with : it is implied by the component ə, except only in the case of ə Verbs that are also classified as b, əb Verbs, e.g. *bslabs* teach, *lab* tell, *rgyab* place. When conjoined with z, g, ŋ, d, n, m, or r, ə therefore implies o ; all əz, əg, əŋ, əd, ən, əm, and ər Verbs are also o (formerly c/o), e.g. the əzo Verb *blta/bltas/lto*s, p. 101 (c), col. (i) : c Piece ; cols. (ii)–(iii) : o Piece. It is for this reason that the component o has been included in brackets in the formulae of the three ə Verbs (əz, əd, ər) on p. 102.

It is only for z Verbs (p. 100) that the Quantity system (p. 102) needs to be established ; but, though a clear majority of z Verbs are classified as l (formerly s/l), there is not here the correlation that there is between ə and o¹ ; nor, even though a majority of ə Verbs have r Imperative forms, does the component r

¹ In the available material twenty-six z Verbs out of thirty-five are classified as l (formerly s/l) ; the remaining nine Verbs, s Verbs, include, for example, *gi shi* die, *təh1/təhe* *phyé* open, *na/na* *na* ill, and *kho/kho* *go* hear (there are no forms **gi:*, **təhe:*, **ne:*, **kho:*).

(formerly r/\bar{r}) correlate with ə to the exclusion of \bar{r} .¹ l (formerly s/l) and r (formerly r/\bar{r}) cannot therefore be omitted from phonological formulae on the same grounds as o is omitted from formulae containing ə (except əb) (p. 103): that they are without exception implied by another component.

Nevertheless, it is possible that the components s and l , and r and \bar{r} , referring to the terms of the Quantity system and the Rounding system respectively, might be omitted from the sort of phonological formula that is suitable for language comparison on other grounds. There is no question of disregarding the sub-classification of z Verbs in terms of the Quantity system, as s or l , or the sub-classification of ə Verbs in terms of the Rounding system, as \bar{r} or r (formerly r/\bar{r}), at the *phonological* and *grammatical* levels: no grammatical statement of the Verbal Phrase could be made without reference to these phonological sub-categories, which indeed provide phonological exponents of certain grammatical categories (p. 99); but these two prosodic sub-categories seem less important in the context of language comparison, and not as relevant to Tibeto-Burman comparison as the major prosodic categories, the Quality system ($z, g, \eta, d, n, b, m, r$; pp. 100–1) and the Labialization system ($y, w, \text{ə}$; p. 100), within which the Quantity and Rounding systems function. For a z Verb (e.g. *shi* die, *blta/bltas/lto*s look) the component z is indispensable in comparison; but the sub-classification of that Verb in terms of the Quantity system appears not to be indispensable. The fact that e.g. *srub/srubs* and *bzo/bzos* have the two grammatically distinct phonetic forms sə or sy ., and sə/sə or sə : respectively (p. 101), while e.g. *phye* and *na* have only the forms təh and təh and nə and nə respectively, without grammatical distinction (p. 103, n. 1), seems in the light of experience to date to be of little consequence for comparison; what is important is that all four Verbs are z , not, for example, g , or η ; and their further sub-classification into s or l can, it would seem, be treated as a subsidiary implication of z : z implies sub-classification into s or l ; the non- z terms g, η , etc., do not.

Similarly, the fact that such ə Verbs as *blta/bltas/lto*s and *bsdad/sdod* have each the grammatically distinct phonetic forms tə : (Imperative) or tə/tə and tə : (non-Imperative), and də : (Imperative) or də/də : (non-Imperative) respectively (p. 102), while e.g. the ə Verbs *'jag* (settle) and *gnang* (grant) have only the forms dʒə/dʒə(g) and nəŋ/nəŋ/nə : respectively, with no distinction of Imperative from non-Imperative form, also appears not to be significant for language comparison; the significant thing for all four Verbs is that they are ə Verbs, not y or w ; and further classification in terms of the Rounding system, with a consequential

¹ Fifty-four out of seventy-eight ə Verbs in the available material have an r form (Imperative), though my informant was prepared to accept a \bar{r} alternative form for twenty-three of these fifty-four Verbs, e.g. *nga/brngas/rngos* reap: (r) ŋə ., (\bar{r}) ŋə ; *bzhag/zhog* put: (r) so ., (\bar{r}) sa .; *bkangs/khongs* fill: (\bar{r}) kā ., (r) kā .; *bsad/bsod* kill: (r) sə ., (\bar{r}) sə .; *btāb/thob* sow: (\bar{r}) təp , (r) təp ; *bskams/skoms* dry: (\bar{r}) kam , (r) kam . He preferred the \bar{r} Imperative form to the r in eleven of these twenty-three examples (the alternative Imperative forms given above are in order of preference).

distinction at the grammatical level of analysis, is an exclusive characteristic of the ə Verb class.

It is because of the assumption that the Quantity components *s* and *l*, and the Rounding components *r* and *ṛ*, are potentialities of *z* and of *ə* respectively that they have been included in brackets in the complete lexical-item phonological formulae (p. 99) as omissible. To include them would be to make that type of phonological formula more detailed than seems necessary for language comparison.

II. Sherpa Dialect

The method just illustrated for dealing with the problem presented to the comparatist by grammatically distinct phonological forms of the same lexical item in Lhasa Tibetan is open to the objection that whatever success it has achieved can be attributed not to its own merit but to choice of dialect; for it is well known that fewer grammatical forms ('roots') need to be distinguished for Lhasa-Tibetan Verbs than for those of certain other spoken-Tibetan dialects, and for classical Tibetan; but in fact the method proposed here has been found equally applicable to a grammatically more complex spoken-Tibetan dialect, Sherpa, which more closely resembles classical Tibetan in diversity of grammatical forms than does the Lhasa dialect.¹

In certain respects the Sherpa accords with the Lhasa dialect: (i), a two-term Quantity system (*s*, *l*) needs to be established in order to deal with alternative duration features of Sherpa *z* Verbs; e.g. (*s*) *la* v. (*l*) *la:*, *lɔ:*, or (*s*) *zə* v. (*l*) *zo:*, as in

<i>s</i>		<i>l</i>	
(i) <i>lai</i> (<i>la-</i>)	I shall look	<i>la:qi</i> (<i>la:-</i>)	I looked <i>lɔ:</i> look
(ii) <i>zoi</i> (<i>zo-</i>)	„ „ make	<i>zo:wi</i> (<i>zo:-</i>)	„ made <i>zo:</i> make

(the *s* form is appropriate to Present and to Future Clauses, the *l* form, or forms, to Past and to Imperative-Affirmative Clauses); cf. Lhasa dialect:

(<i>s</i>) <i>ta/ta</i> v. (<i>l</i>) <i>tɛ:</i> , <i>tɔ:</i>	<i>blta</i> v. <i>bltas</i> , <i>ltos</i>	look
(,,) <i>so/so</i> v. (,,) <i>sɔ:</i>	<i>bzo</i> v. <i>bzos</i>	make (pp. 101-2) ² ;

¹ 'The student is warned against using the different roots for the present, future, perfect, and imperative given in general dictionaries. These hold good only for the literary language and could often lead him astray in the [Lhasa] colloquial' (C. A. Bell, *Grammar of Colloquial Tibetan*, Alipore, 1939).

² The Sherpa Quality system, which discharges much the same prosodic functions as the Lhasa (pp. 100-1), comprises not eight but ten terms (*z*, *g*, *ŋ*, *d*, *n*, *b*, *m*, *r*, *l*, *s*), of which two (*d*, *n*) are not represented in the disyllabic ə Piece. The terms of the Lhasa and Sherpa Quality systems regularly correspond as follows:

Sherpa :	<i>z</i>	<i>g</i>	<i>ŋ</i>	<i>d</i>	<i>n</i>	<i>b</i>	<i>m</i>	<i>r</i>	<i>l</i>	<i>s</i>
Lhasa :	<i>z</i>	<i>g</i>	<i>ŋ</i>	<i>d</i>	<i>n</i>	<i>b</i>	<i>m</i>	<i>r</i>	<i>r</i>	<i>d</i>
common	* <i>z</i>	* <i>g</i>	* <i>ŋ</i>	* <i>d</i>	* <i>n</i>	* <i>b</i>	* <i>m</i>	* <i>r</i>	* <i>l</i>	* <i>s</i>

The Sherpa examples are of the Khumbu dialect; my informant was Tenzing Lodroo (*bstan-'dzin blo-gros*), a young monk of Thyangboche monastery, born in Namche Bazaar.

and, (ii), a two-term Rounding system (r , \bar{r}) needs to be established in order to deal with alternative labial features of the vast majority of Sherpa ə Verbs ; e.g. (\bar{r}) la , $\text{la}:$ v. (r) lə :, or (\bar{r}) təər v. (r) təər , as in

		\bar{r}		r	
(i)	lai (la-)	I shall look	la:qi (la:-)	I looked	lɔ: look
(ii)	tɛəri (tɛər-)	„ „ visit			tɛor visit

(the r form is appropriate to Imperative-Affirmative Clauses, the \bar{r} forms to all other types of Clause) ; cf. Lhasa dialect :

(\bar{r}) ta/ta , tə: v. (r) tə :	blta , bltas v. ltos	look
(,,) $\text{təa:}/\text{təar}$ v. (,,) tə :	bcar v. gcor	visit (p. 102). ¹

The Sherpa differs from the Lhasa dialect in that for certain ə Verbs, further classifiable as g , η , b , m , r , and l in terms of the Sherpa Quality system (p. 105, n. 2), two grammatically distinct \bar{r} forms (non-Imperative) need to be recognized, one of them appropriate to Present and to Future Clauses (excluding Imperative-Affirmative) and the other to Past Clauses. Not all Sherpa ə Verbs have two \bar{r} forms ; but for the sake of those which do, two further prosodic systems are established, the Neutrality, and the Fronting.

The two-term Neutrality system (n , \bar{n}) is needed to deal with an alternation of labial features, lip-rounding (\bar{n}) as opposed to a non-rounded (or neutral) lip position (n) ; e.g. (\bar{n}) zog v. (n) za: :, or (\bar{n}) təng v. (n) təng , as in

	\bar{n}		n
(i) zogi (zog-)	I shall put	za:qi (za:-)	I put
(ii) təngi (təng-)	„ „ send	təngi (təng-)	„ sent

(the \bar{n} form is appropriate to Present and to Future Clauses, the n to Past Clauses)² ; the number of Verbs to which this system applies is twenty-eight.

The two-term Fronting system (f , \bar{f}) applies to nine Verbs of types $\text{ə}\eta$, əb , $\text{ə}m$, and $\text{ə}l$ (p. 105, n. 2), and is concerned with an alternation of frontness (f) with backness (\bar{f}) ; e.g. (f) dəb v. (\bar{f}) təβ , or (f) gjem v. (\bar{f}) kam , as in

	f		\bar{f}
(i) dəbgunək (dəb-)	he sows	təβsə (təβ-)	he sowed
(ii) gjembi: (gjem-)	I shall dry	kambi: (kam-)	I dried

¹ Of sixty Sherpa ə Verbs fifty-nine have both r and \bar{r} forms. The sole exception is the $\text{ə}\eta$ Verb nəŋ , grant (cf. the Lhasa dialect, pp. 103-4).

² The r forms (Imperative) of these two Verbs are : (i), zək ; (ii), tə ; the corresponding classical-Tibetan forms are :

(i) Present	'jog ,	Past	bzha g,	Imperative	zhog
(ii) „	gtong	„	btang	„	tong

(the *f* form is appropriate to Present and to Future Clauses, the *f̃* to Past Clauses).¹

Thus, to classify a Sherpa Verb as *ə* carries with it the implication of further classification in terms of the Quantity system for *əz* Verbs (p. 105) and the Rounding system for *əz*, *əg*, *əŋ*, *əd*, *ən*, *əb*, *əm*, *ər*, *əl* and *əs* Verbs alike, with further sub-classification of the *f̃* forms (non-Imperative) in terms of the Neutrality and Fronting systems as follows :

- (i) Neutrality (*n*, *n̄*) : *əg*, *əŋ*, *əb*, *əm*, *ər*, *əl* ;
- (ii) Fronting (*f*, *f̃*) : " " " " ;
- (iii) Neither : " " " " " " *əs*

but, again, these sub-classifications, though highly significant for grammatical statement, seem to be of no account in language comparison. It is enough that all the Sherpa Verbs in the preceding two paragraphs are classifiable as *ə* ; there is no need to formulate their sub-classes in lexical-item phonological formulae.

The examples of *f* and *f̃* forms (p. 106) do more than show a difference of frontness versus backness ; for these *f* and *f̃* forms also differ from each other in two other respects : the *f*-form examples are also examples of Tone-2 Words, with initial low pitch, and of the associated complex of Word-initial features voice + occlusion (*d*, *g*), while the *f̃*-form examples are also examples of Tone-1 Words, with initial high pitch, and of the associated complex of Word-initial features voicelessness + occlusion + non-aspiration (*t*, *k*). In fact the two forms of each Verb differ not only in their Fronting classification, as *f* versus *f̃*, but also in their Tone classification, one form being a Tone-1, and the other a Tone-2. The two Verbs in these examples, and other Verbs that resemble them in this tonal alternation, including the associated alternation in voice-voicelessness, can therefore be classified as 1/2 ; and it is not only *ə* Verbs that can be classified as 1/2 but *ə*, *y*, and *w* Verbs equally ; e.g.

<i>Tone 2 (voice)</i>		<i>Tone 1 (voicelessness, non-asp.)</i>	
(i) <i>ə</i> :	<i>ṣṣṣ</i> I shall load	<i>ṣṣṣ</i>	I loaded
(ii) <i>y</i> :	<i>ṣṣṣ</i> " " take off	<i>ṣṣṣ</i>	" " took off
(iii) <i>w</i> :	<i>ṣṣṣ</i> " " pierce	<i>ṣṣṣ</i>	" " pierced

(the Tone-2-Word form is appropriate to Present and to Future Clauses, the Tone-1 to Past Clauses).²

¹ The *r* forms (Imperative) of these two Verbs are : (i), *ṣṣṣ*, (ii), *ṣṣṣ*. The corresponding classical-Tibetan forms are :

(i) Present *'debs*, Past *btab*, Imperative *thob* ;
(ii) " *skem*, " *bskams*, " *skom*.

² cf. classical Tibetan : (i) Present root *'gel*, Perfect *bkal*
(ii) " " *'bud*, " *phud*
(iii) " " *'bug*, " *phugs*

By reference to the two-term Tone system (1, 2) three classes of Sherpa Verb can be distinguished: (i), Tone-1 only; (ii), Tone-2 only; (iii), alternating tonally as above (1/2). In this case, there being three categories, there is no means of simplifying the trigraphic component 1/2 (cf. pp. 102-3); and the three categories would have to be formulated as 1, 2, and 1/2, if, that is, the relationship of component to prosodic term is to be preserved.

The greater grammatical and phonological complexity of Sherpa as compared with Lhasa Tibetan is reflected in two additional prosodic systems (Neutrality, Fronting; pp. 106-7) and in the three Tone components 1, 2, 1/2 (cf. the two Lhasa components 1 and 2; p. 99); but this difference between the two dialects does not affect the efficacy of the method of language comparison proposed here, comparison on the basis of regular correspondences between components of the lexical-item phonological formulae established for each language or dialect by prosodic analysis.